(2) All buoyant cushions more than 2 inches thick, and all buoyant cushions 2 inches thick which are of shapes different from those covered by paragraph (c)(1) of this section, shall be filled with kapok or fibrous glass as determined in the following formulas:

Amount of kapok (ounces) = A × t ÷ 22.5 (1)

Amount of fibrous glass (ounces) = A × t ÷ 12.5 (2)

Where:

A = Top surface area of cushion in square inches as determined from measurements taken along finished edges.

t = Thickness of boxing or gusset of finished cushion in inches.

(d) *Pad covers for buoyant material.* Before being inserted in the outer cover the buoyant material shall be placed in waterproof vinyl film pad covers which shall be heat-sealed tight. The heat-sealed pad seams shall show an adhesion of not less than 8 pounds when one inch strips cut across and perpendicular to the seams are pulled apart at a rate of separation of the clamping jaws of the test machine of 12 inches per minute. Each cushion shall contain not less than four pads and all pads in a cushion shall contain approximately equal portions of the total amount of buoyant material in the cushion. The buoyant material may be inserted directly into the vinyl film pad covers, or may first be packed in bags made of print cloth or other suitable material and then inserted into the vinyl film pad covers. The pads shall be of such size as to adequately fill the outer cover, and prior to sealing, the pads shall be evacuated of air sufficiently that when sat on the pads will not ''balloon'' excessively because of the pressure in the pad covers. For 15″×15″×2″ cushions the four vinyl film pad covers shall each be cut approximately 12″ wide × 12″ long or approximately 8″ wide × 18″ long shall have a sealed area of approximately 125 square inches; shall contain not less than 5 ounces of kapok or 9 ounces of fibrous glass each; and the volume displacement of the individual heat-sealed pad inserts shall be 5½ pounds each, plus or minus ½ pound, when tested in accordance with the method set forth in § 160.048–5(e)(1), except that the pad covers shall not be slit open, and the period of submergence shall be only long enough to determine the displacement of the pads.

(e) *Grab straps.* Grab straps shall be attached as shown on Dwg. No. 160.048–1 and shall finish 20 inches long and 1 inch wide at opposite ends. The grab straps, if formed from cover material shall be folded and stitched together so as to produce a double thickness with raw edges turned under. Other means will be given special consideration.

(f) *Seams and stitching.* Seams shall be constructed with not less than a ⅜ inch border between the seam and the edge of the cover materials. All stitching shall be a lock stitch, 7 to 9 stitches per inch, except as follows: Chain stitching 6 to 8 stitches per inch, with 20/4 thread on top and 40/3 thread on the bottom, will be acceptable in constructing straps.

(g) *Workmanship.* All cushions shall be of first class workmanship and shall be free from defects materially affecting their appearance or serviceability. Cushions classified as ''seconds'' or ''irregular'' will not be acceptable under this specification.

[CGFR 65–37, 30 FR 11583, Sept. 10, 1965]

§ 160.048–5 Inspections and tests.[1]

(a) *General.* Manufacturers of listed and labeled buoyant cushions shall maintain quality control of the materials used, manufacturing methods and the finished product so as to meet the applicable requirements, and shall make sufficient inspections and tests of representative samples and components produced to maintain the quality of the finished product. Records of tests conducted by the manufacturer and records of materials, including affidavits by suppliers that applicable requirements are met, entering into construction shall be made available to the recognized laboratory inspector or the Coast Guard inspector, or both, for review upon request. Any examinations, inspections and test which are required by the recognized laboratory

[1] The manufacturer of a personal flotation device must meet 33 CFR 181.701 through 33 CFR 181.705 which require an instruction pamphlet for each device that is sold or offered for sale for use on recreational boats.

for listed and labeled devices produced will be conducted by the laboratory inspector at the place of manufacture or other location at the option of the laboratory.

(b) *Lot size and sampling.* (1) A lot shall consist of not more than 1,000 buoyant cushions. A new lot shall be started with any change or modification in materials used or manufacturing methods employed. When a lot of buoyant cushions is ready for inspection, the manufacturer shall notify the recognized laboratory so that they may, at their discretion, assign an inspector to the plant for the purpose of making any tests and inspections deemed necessary. From each lot of buoyant cushions, the manufacturer or the recognized laboratory or U.S. Coast Guard inspector, when assigned, shall select samples in accordance with Table 160.048–5(b)(1) to be tested for buoyancy in accordance with paragraph (e) of this section.

TABLE 160.048–5(b)(1)—SAMPLING FOR BUOYANCY TESTS

Lot size	No. of cushions in sample
200 and under	1
201 to 400	2
401 to 600	3
601 to 1,000	4

(2) For a lot next succeeding one from which any sample cushion failed the buoyancy test, the sample shall consist of not less than 10 specimen cushions to be tested for buoyancy in accordance with paragraph (e) of this section.

(c) *Additional tests.* Unannounced examinations, tests and inspections of samples obtained either directly from the manufacturer or through commercial channels may be made to determine the suitability of a product for listing and labeling, or to determine conformance of a labeled product to the applicable requirements. These may be conducted by the recognized laboratory or the Coast Guard.

(d) *Test facilities.* The laboratory inspector, or the Coast Guard inspector, or both, shall be admitted to any place in the factory where work is being done on listed and labeled products, and either or both inspectors may take samples of parts or materials entering into construction of final assemblies, for further examinations, inspections, or tests. The manufacturer shall provide a suitable place and the apparatus necessary for the performance of the tests which are done at the place of manufacture.

(e) *Buoyancy*—(1) *Buoyancy test method.* Remove the buoyant pad inserts from the cushion and cut three slits in the vinyl film, each not less than 6 inches in length on both sides of each pad. Securely attach the spring scale in a position directly over the test tank. Suspend the weighted wire basket from the scale in such a manner that the basket is weighed while it is completely under water. In order to measure the actual buoyance provided by the pads, the underwater weight of the empty basket should exceed the buoyancy of the pads. To obtain the buoyancy of the pads, proceed as follows:

(i) Weigh the empty wire basket under water.

(ii) Place the pads inside the basket and submerge it so that the top of the basket is at least 2 inches below the surface of the water for 24 hours. The tank shall be locked or sealed during this 24-hour submergence period. It is important that after the pads have once been submerged that they shall remain submerged for the duration of the test, and at no time during the course of the test shall they be removed from the tank or otherwise exposed to air.

(iii) After the 24-hour submergence period unlock or unseal the tank and weigh the weighted wire basket with the pads inside while both are still under water.

(iv) The buoyancy is computed as (i) minus (iii).

(2) *Buoyancy required.* The buoyant pads from the cushion shall provide not less than 20 pounds total buoyancy.

[CGFR 65–37, 30 FR 11585, Sept. 10, 1965, as amended by CGFR 70–143, 35 FR 19963, Dec. 30, 1970; CGD 78–008, 43 FR 9772, Mar. 9, 1978]

§ 160.048–6 Marking.

(a) Each buoyant cushion must have the following information clearly marked in waterproof lettering:

(1) In letters that can be read at a distance of 2 feet: